The most recent paper of the series[7] reports the results of an investigation of the generally accepted idea that an excess of basic lead acetate, when added to a solution of invert sugar, precipitates a portion or all of the levulose present as a soluble lead salt. This idea is shown to be incorrect; levulose in dilute solutions is not precipitated by basic lead acetate, even in the presence of chlorides, sulphates, or carbonates. If the acetate be added in excess and allowed to act upon the sugars for a considerable length of time, the amount of levulose present decreases progressively with increase in the time during which the lead is allowed to act. This is due to the formation from the levulose, not of a lead salt, but of a substance having a lower reducing power and much less optical activity than has levulose. It is suggested that this substance may be glutose, which was made by LOBRY DE BRUYN and VAN EKENSTEIN by heating a 20 per cent levulose solution with lead hydroxide at 70–100°, and which was described by them as having about one-half the reducing power of dextrose and as possessing only very slight optical activity. DAVIS considers that basic lead acetate acts at ordinary temperatures in the same way as does lead hydroxide, the action becoming more rapid as the temperature rises.

In order to avoid any loss of levulose when clearing a solution, the basic lead acetate must be added little by little in the cold until precipitation of the impurities is just complete, care being taken that the excess employed is not greater than 1 cc. per 100 cc. of sugar solution (best accomplished by making preliminary tests upon small portions of the filtrate). The solution should at once be filtered through a Buchner funnel, washed, and the excess of lead immediately precipitated by the use of Na_2CO_3 or Na_2SO_4. If excess of Na_2CO_3 be avoided and the solution be shaken up with a little toluene, it may be kept for months without the occurrence of any change. This treatment is very much to be preferred to the use of normal lead acetate, which fails to wholly remove optically active gums and which is a poor clarifying agent, but it is essential to accuracy that the precipitation be conducted in the cold.

The papers here reviewed were preliminary to a series on the formation and translocation of carbohydrates in plants, to be reviewed later.—JOSEPH S. CALDWELL.

Taxonomic notes.—ARTHUR,[8] in continuation of his studies of the Uredineae, has described 23 new North American species in the following genera: *Uromyces* (2), *Puccinia* (8), *Aecidium* (10), *Uredo* (3). The majority of them are from Mexico and Central America.

ASHE[9] has described a new *Vaccinium* (*V. Margarettae*) from the mountains of Georgia and South Carolina, where it occurs in association with *V. vacillans*.

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[7] DAVIS, WILLIAM A., The estimation of carbohydrates. V. The supposed precipitation of reducing sugars by basic lead acetate. Jour. Agric. Sci. **8**:7–15. 1916.

[8] ARTHUR, J. C., New species of Uredineae. X. Bull. Torr. Bot. Club **45**:141–156. 1918.

[9] ASHE, W. W., Notes on southern woody plants. Torreya **18**:71–74. 1918.

EVANS[10] has described 4 new species of *Lejeunea* from Florida, 2 of which seem to be endemic to that state. Of this group of liverworts Florida is now known to contain 44 species of the 48 recorded from the United States.

FERNALD[11] has described 2 new species of *Rosa* (*R. johannensis* and *R. Williamsii*) from northern Maine and adjacent Canada.

PETCH[12] has described 138 new species of fungi from Ceylon, representing approximately 75 genera. Among them there are 32 new species of *Uredo*.

WIEGAND[13] has published the result of his studies of *Elymus* in Eastern North America, discussing 7 species, one of which (*E. riparius*) is described as new.—J. M. C.

Phylogeny of Filicales.—In continuation of his studies of Filicales, BOWER[14] has presented the Pteroideae. The observed details of phyletic relationships among the genera are too numerous to recite, but the paper contains a wealth of material for the special student. In a former paper of the series BOWER suggested that the leptosporangiate ferns, exclusive of the Osmundaceae, may be grouped into two phyletically distinct series: the Superficiales, in which the origin of the sorus is constantly from the surface of the leaf; and the Marginales, in which it is as constantly from the margin. All of the Pteroideae belong to the Marginales, and they show analogies with the Superficiales, especially in those forms which have apparently superficial sori. He shows that such sori result from "a slide of the marginal sorus to a superficial position." "The Superficiales are believed to represent ferns in which that slide took place so early in their descent that the two sequences must be held to be phyletically distinct, notwithstanding those analogies."—J. M. C.

Atmometry.—The desirability of having an atmometer so constructed as to indicate the magnitude of the atmospheric evaporation power at any given moment is discussed by JOHNSTON and LIVINGSTON.[15] Attempts to produce such an instrument are described, but so far it has not been possible to overcome certain difficulties in converting evaporation power into pressure. The nearest approach to such an instrument which has proved successful is a device

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[10] EVANS, A. W., Noteworthy *Lejeuneae* from Florida. Amer. Jour. Bot. **5**: 131–150. *figs. 5*. 1918.

[11] FERNALD, M. L., *Rosa blanda* and its allies of northern Maine and adjacent Canada. Rhodora **20**:90–96. 1918.

[12] PETCH, T., Additions to Ceylon fungi. Ann. Roy. Bot. Gard. Peradeniya **6**:195–256. 1917.

[13] WIEGAND, K. M., Some species and varieties of *Elymus* in Eastern North America. Rhodora **20**:81–90. 1918.

[14] BOWER, F. O., Studies in the phylogeny of the Filicales. VII. The Pteroideae. Ann. Botany **32**:1–68. *figs. 43*. 1918.

[15] JOHNSTON, EARL S., and LIVINGSTON, B. E., Measurement of evaporation rates for short time intervals. Plant World **19**:136–140. 1916.